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ABSTRACT

The author uses a developmental model (1) to describe the developmental reinforcement process as it occurs in a child's life, using a hierarchical concept, and (2) to discuss some educational consequences of a reinforcement deficit. The developmental reinforcement process is composed of a hierarchy of four levels. Development takes place in succession beginning with the primary level, proceeding to the social and symbolic levels, and ending with the abstract level. Each level in the hierarchy is dependent upon adequate development at the primary level. If the child does not learn to respond constructively to primary reinforcement, it is unlikely that he will learn to respond to reinforcement at higher levels. (Author/RJ)

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DEVELOPMENTAL REINFORCEMENT AND EDUCATION

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Abstract - Using a developmental model the author: (1) used a hierarchy to describe the developmental reinforcement process as it occurs in a child's life, and (2) discussed some educational consequences of a reinforcement deficit. The developmental reinforcement process is composed of a hierarchy of four levels. Development takes place in succession beginning with the primary level, proceeding to the social, symbolic, and ending with the abstract level. Each level in the hierarchy is dependent upon adequate development at the primary level. If the child does not learn to respond constructively to primary reinforcement it is unlikely that he will learn to respond to reinforcement at higher levels.

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DEVELOPMENTAL REINFORCEMENT AND SPECIAL EDUCATION

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The use of hierarchies to describe human phenomena in the social and behavioral sciences can be traced far back into history. The concept of hierarchy was originally used in the medievel writings of Dionysius Aeropagiticus to describe the system of church government used to grade priests into ranks (Britannica, 1910). In modern times, the concept has been used analytically to describe and explain a wide variety of phenomena.

Sigmund Freud, in formulating the theoretical basis for his psychodynamic system, used a hierarchy to explain the development of the id, ego, and superego. The hierarchy was composed of five stages of development, (oral, anal, phallic, latency, and genital). As the child developed through these five stages, the id, ego, and superego changed in focus (Freud, 1950, and 1959).

Abraham Maslow used a developmental hierarchy to explain the development of human needs (Maslow, 1943). Bloom et al. (1956) used a developmental hierarchy to explain the development of intellectual abilities. Krathwahl et al. (1964) used a similar model to define the stages of development of student attitudes toward learning and Piaget (1956) has utilized a developmental hierarchy to explain the process of cognitive development.

Rationale

Using a developmental model, the author will: (1) use a hierarchy to describe the developmental reinforcement process as it occurs in a child's life, and (2) discuss some educational consequences of a deficit in this development.

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Developmental reinforcement is a process that begins at birth and ends with the termination of life. Within this span of time, there are critical events that must take place in the child's life in order for him to develop normally. To establish a perspective of the developmental reinforcement process, a hierarchy has been developed which will provide a framework for examining the child's life as the process takes place. This process involves the establishment of responsiveness to a variety of environmental stimuli which acquire, through learning, reinforcing properties.

The developmental reinforcement process is composed of a hierarchy of four levels. Development takes place in succession beginning with the primary level, proceeding to the social, symbolic, and ending with the abstract level. Each level in the hierarchy is dependent upon adequate development at the primary level. If the child does not learn to respond with "satisfying emotional feelings" to primary reinforcement, it is unlikely that he will learn to respond constructively to reinforcement at higher levels. Therefore, development at the primary level is very critical to development at subsequent levels, (see Figure 1).

Primary Level

At the primary level of the hierarchy, satisfying the child's basic biological needs is important. For example, when the child experiences the sensation of hunger pangs, mother reads the signal and responds by picking up the child, holding him securely, and feeding him. These acts, performed by mother in response to the child's signal of hunger or other discomfort, are the reinforcing events which facilitate the child's emotional development.

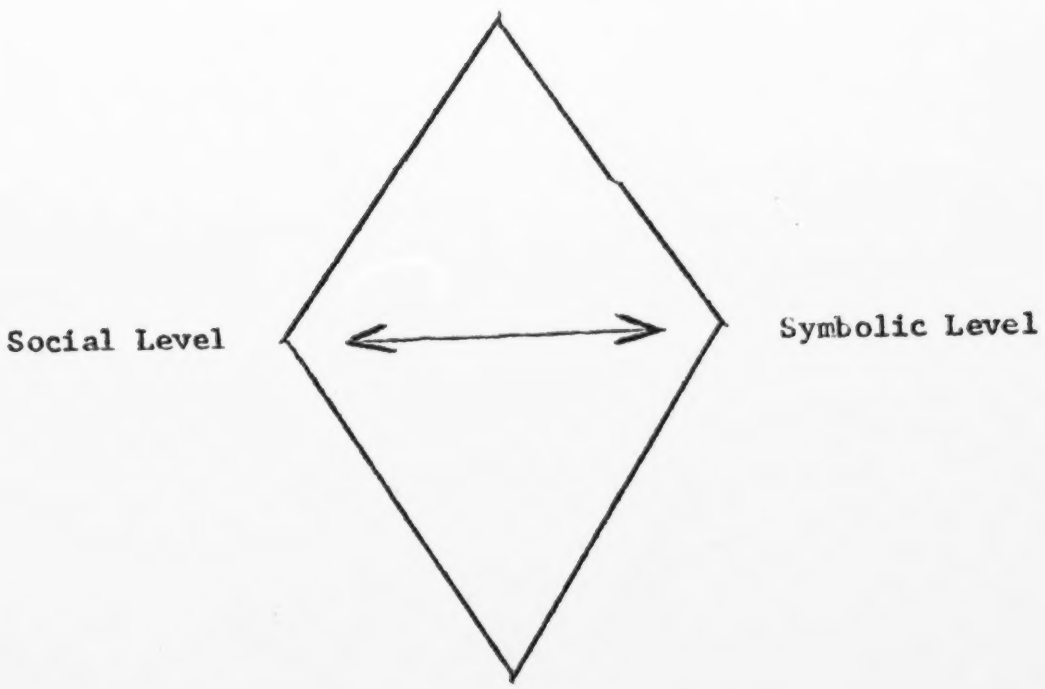

Figure 1

The double arrows indicate that development at the social and symbolic levels occur simultaneously. However, both levels are dependent upon adequate development at the primary level. The abstract level is also dependent upon adequate development at the primary level and proceeds from development at the social any symbolic levels.

As mother performs these reinforcing acts, the child begins to move gradually toward a "satisfying emotional state" and eventually experiences relief from the discomfort caused by hunger. The "satisfying emotional state" resulting from relief can be observed and measured through internal changes in respiration, heart rate, galvanic skin response (GSR), and facial vascularity (Morgan, 1965, and Jones, 1930). Physiological changes are brought about in the child through the pairing of primary reinforcement with other stimuli which surround mother during feeding.

The reinforcing events (holding, talking, rocking, etc.) that occur during and are somewhat incidental to feeding are very critical to the development of the child. If the child is deprived of this type of reinforcement or stimulation in conjunction with feeding, he will develop transitory deficits on developmental tests (Schaffer, 1956). A relationship between tactile stimulation and maternal love such as the production of erotic stimulation by fondling, gentling, etc., has been identified by Rashkis and Singer (1959). Taubenhaus has observed profound emotional changes occuring in children who were confined to their cribs during hospitalization in the early months of life (Taubenhaus, 1968). Racamier (cited by Newton et al., 1968, p. 590) has asserted that restrictions in mobility are likely to impede the growth of social relations.

According to basic learning principles, stimuli associated with reinforcement (food, body contact and other stimulus events) acquire reinforcing qualities. Therefore, the child learns that mother signifies satisfaction and contentment. As a result of this learning the child begins to search out the source which leads to effective gratification of his needs. He has learned these responses as a result of pairing primary reinforcement with physiological states (e.g. hunger, thirst, pain, lack of air).

The initial satisfaction gained from feeding is generalized to other sources of pain and discomfort. For example, the sensations associated with injury, cold, and illness, are sufficiently similar to the pain of hunger that the child will make the same approach responses he made to mother when he was hungry. That is, the child who approached his nurturent mother when he was hungry will approach her for nurturance when he experiences pain of discomfort for other reasons. Further, since mother is similar to other people, the child will, in varying degrees, generalize these positive responses to a variety of people. In brief, the initial satisfaction the child receives from mother's ministrations to satisfy biological needs forms the basis for learning whether or not people are a source of reinforcement, and whether or not approaching them leads to satisfaction.

Social Level

Once the child generalizes the satisfying emotional responses associated with biological satisfaction he begins to respond to mother's soothing voice, her familiar face, her smiles, and the like. These social stimuli are beginning to take on new meaning -- they become reinforcing to the child. At this point, when mother says "good baby" and strokes his body, smiles and repeats "coo-chee-coos", those familiar changes associated with biological satisfaction are made. Here too there are changes in his galvanic skin response, heart beat, respiration, facial vascularity, and in some instances the child will respond by having an infantile erection. These were the satisfying emotional responses originally associated with biological satisfaction. Now these responses can be elicited by social reinforcers.

In early stages of the learning process, the child glances at approaching people. He will stop sucking mother's breast or a bottle to look at whomever may be feeding him, then continue again. After many pairings of

mother with the feeling which results from biological satisfaction, he appears to become aware of her presence and other adults who have been associated with the satisfaction of biological needs. The "satisfying emotional feelings" associated with biological satisfaction become generalized to the point where picking up the child becomes sufficient enough for him to stop crying before his troubles are alleviated. The child may be distracted from his hunger for a few minutes by the soothing coo-coos mother makes, her gentle rocking, or other forms of attention. This kind of social reinforcement becomes effective enough to bring about a temporary "satisfying emotional state".

As response maintenance to social reinforcers increases, the child will almost always stop crying momentarily when he hears the voice of adults and often at the sight of an approaching person. At feeding time, the child will begin to play and smile in response to mother's speech, instead of taking the milk that was once the primary source of satisfaction. The child is beginning to increase his responsiveness to social reinforcement. In a sense, he is becoming sociable.

The fact that development at all levels is dependent upon adequate development at the primary level can't be overemphasized. To insure normal development through the social, symbolic and abstract levels, it is imperative for him to learn to respond with "satisfying emotional feelings" to mother's ministration of biological satisfaction (primary reinforcement). Subsequently, the child learns to respond to social, symbolic, and abstract reinforcement.

The importance of mother, or a mother substitute, in the developmental reinforcement process can't be disassociated from the on-going developmental process. Mother's caring for the child in the form of "objective love acts" (Rashkis and Singer, 1959) or supplying the child with primary and social

reinforcement facilitates the generalization of "satisfying emotional feelings' at subsequent levels in the hierarchy.

Symbolic Level

As the child develops strong response tendencies to reinforcers at the primary and social levels of the developmental reinforcement process, he gradually begins to achieve "satisfying emotional feelings" from symbolic reinforcers. During the process of growing up, mother buys the child small things or gives him money to buy candy for performing given tasks. She then pairs this act with another effective social reinforcer by telling the child how good he looks or how well he has performed the task or by giving an approving smile. This, in turn, gives satisfaction to the child. The satisfying feelings experienced by the child are very similar to those emotional feelings gained from mother's application of primary reinforcement at the primary level.

At this level in the process, the "satisfying emotional feelings" gained from the satisfaction of biological needs at the primary level generalize and become associated with symbolic reinforcers. The child learns to respond to such things as clothes, money, tokens, etc., and later to such things as certificates, green stamps, and diplomas. These symbolic stimuli have become reinforcing because they have gained the potential for eliciting "satisfying emotional feelings". In other words, the principle of generalization is beginning to operate at the symbolic level. Since this is a gradually occuring process which started at the primary level, the child will eventually generalize these emotional responses to other and more varied forms of symbolic reinforcers.

Abstract Level

After the child has progressed through the primary, social, and symbolic

levels, he gradually begins development at the abstract level of the developmental reinforcement process. At the abstract level, the child reaches the highest level of development in the hierarchy of reinforcement. Development at this level is also dependent upon establishing an adequate foundation at the primary level. In addition, development at the abstract level is dependent upon development at the social and symbolic levels.

At the abstract level, the child will experience "satisfying emotional feelings" from reinforcers that are abstract in nature. Etymologically, the term "abstract" comes from two Latin words ab + trachere which literally means to draw away. In this contex, abstract reinforcer refers to those reinforcers that are intimately involved with language development but have no concrete referent outside of the language system. For example, the child will learn through association to respond with "satisfying emotional feelings" to his concept of good, his concept of honesty, his values, his concept of God and later his philosophy of life, or his concept of the nature of the universe. He is learning to evaluate his own behavior relative to a language based criteria. In order for these concepts to become reinforcing to the child, he must have developed responsiveness to the meaning of these ideas that are transmitted primarily through language.

Development at the abstract level begins when the child responds with "satisfying emotional feelings" at the social level. When the child's mother or father reinforces him with smiles and words of approval for performing developmental tasks, he is beginning to learn through pairing to respond with the satisfying feelings derived from primary reinforcement. Through the process of generalization the child begins to internalize these concepts and ideas. He will begin to tell himself that he is a "good boy" when he

performs in a desired or acceptable manner. In addition, the child will experience satisfaction when he thinks of his "good deeds", his "good values" and his "good philosophy" of life.

Reinforcement and Education

If we conceptualize all the activities of a teacher in terms of behavior produced before a learner makes a response and after the learner makes a response, we would have two categories of teacher behavior: (1) eliciting and (2) reinforcing. Eliciting behaviors are those behaviors designed to generate some response from a student. These teacher behaviors are generally instructional in nature and include activities such as providing instructional materials, methods of instruction, approach to instruction, and establishing a learning environment (Peter, 1972). These activities are the subject matter of the methods courses given in teacher education programs.

Reinforcing behaviors are designed to respond to what a student does in the learning situation. For example, a teacher may make a favorable or unfavorable comment, frown, place a mark on the student's paper, or do any numbe of things which might follow a response made by a student. However, reinforcing behaviors which are designed to respond to what a student does is a neglected area of study in methods courses, but one of the most important variables in the teaching and learning process.

The task of logically explaining the different developmental levels of responsiveness of students to the various types of eliciting stimuli is rather simple. For example, a student reads grade one material or grade two material. However, when a second dimension is added and we state that a student also has different developmental levels of responsiveness to reinforcing stimuli, (for example, the student is responding to primary, social, symbolic or abstract reinforcement) consideration is generally overlooked. If the student

is to experience success during the teaching and learning process, his level of responsiveness to eliciting as well as reinforcing stimuli must be given maximum consideration.

One of the established prerequisites for entering school is that the child must have developed responsiveness to reinforcers at the social, symbolic and abstract levels. He must be able to derive "satisfying emotional feelings" from reinforcement contingencies utilizing these reinforcers. The reinforcement contingencies used by teachers, peers, and other adults must have the potential for eliciting "satisfying emotional feelings". If these feelings are not elicited, the child may make inappropriate responses to the learning situation and may exhibit behaviors associated with unhappiness, insecurity, immaturity, emotional disturbance, hyperkinesis, neurological impairment, mental retardation, cultural deprivation, etc. Typical behavioral manifestations for a child with a reinforcement deficit in the social setting include very short attention span, inability to remain in seat at the appropriate time, inability to complete a task, continuously distracting other students, excessive hostilities or fears, and erratic thought processes. In short, the child has trouble adjusting to his new environment and all of these symptoms can be signs of a reinforcement deficit.

When the child enters school for the first time he will have had numerous experiences at all levels of the hierarchy. However, if he has not learned to associate reinforcers at all levels of the hierarchy with the "satisfying emotional feelings" achieved from biological satisfaction, he will not exhibit the behaviors associated with the motivation to learn. In addition, the child will not be motivated to learn under the reinforcement contingencies normally found in the school setting. In order for the child to have a "love for learning" he must be able to derive satisfaction from the reinforcement contingencies found in the school setting.

Traditionally, schools have payed much attention to the child's responsiveness to elicitors and very little, if any, to reinforcers. Descriptions of the child's inability to respond have included such explanations as: the child is immature, culturally deprived, lacks reading readiness, is neurologically impaired, etc. The child who has not learned to follow directions, to respond to the reinforcers utilized in the school setting, to pay attention, to sit in his seat for a period of time, to use "middle class" language to express his thoughts and demands, to complete an assigned task, and to look at the teacher when directions are being given, will have problems with many school subjects. These behaviors are necessary for school success, and the child with a deficit will have problems adjusting.

Generally speaking, teachers are very effective at establishing a child's developmental level of responsiveness to elicitors in reading and mathematics. This has resulted from the tremendous amount of attention given to the subject matter in teacher education courses. Training relative to establishing a child's developmental level of responsiveness to reinforcement has been given little or no attention in teacher education courses. Procedures for establishing level of responsiveness to reinforcement were utilized in research by Garris and Peter (1972) and a detailed description of the procedures can be found in Prescriptive Teaching System, Individual Instruction (Peter, 1972). The child's level of responsiveness to reinforcement also must be given an equal amount of attention, if a child is to succeed in school. If the child's reinforcement level is not given consideration in the educationa program, he may begin to behave in a manner incompatible with successful adjustment in the school setting.

References

Bloom, B. S., Engelhart, M.D., Furst, E.J., Hill, E.H., and Krathwahl, D. R. Taxonomy of Educational Objectives: The Cognitive Domain, Handbook I. New York: Longmans, 1956.

Encyclopedia Britannica (Eleventh Edition). New York: Encyclopedia Britannica Company, 1910.

Freud, S. Analysis Terminable and Interminable. (Original publication, 1937, in Collected Papers of Sigmond Freud) London: Hograth Press, 1950.

Freud, S. Inhibitions, Symptoms and Anxiety. (Original papers, 1926, in Standard Edition of Complete Psychological Works of Sigmond Freud, Vol. 20) London: Hograth Press, 1959.

Garris, R.P. and Peter, L.J. "Behavior rating used as an indicator of concomitant development in a prescriptive teaching program." Unpublished paper (Pittsburgh, Pennsylvania: University of Pittsburgh, 1972).

Jones, H.E. "The galvanic skin reflex in infancy." Child Development, 1930, 1, 106-110.

Krathwahl, D.R., Bloom, D.S., and Masio, B.B. Taxonomy of Educational Objectives: The Affective Domain, Handbook II. New York: McKay, 1964.

Maslow, A.H. "A theory of human motivation." Psychological Review, 1943, 50, 370-396.

Morgan, C.T. Physiological Psychology. New York: McGraw-Hill, 1965.

Peter, L.J. Prescriptive Teaching System, Individual Instruction. New York: McGraw-Hill, 1972.

Piaget, J., and Inhelder, B. The Growth of Logical Thinking From Childhood to Adolescence. New York: Basic Books, 1956.

Racamier, P.C. "Etude Clinque des Frustrates Prococes," in Newton, G. and Irvin, S. (Eds.) Early Experience and Behaviors. Illinois: Charles C. Thomas, 1968.

Rashkis, H.A., and Singer, R.F. "The Psychology of Schezophrenia." AMA, Arch, Gen. Psychol., 1959, 1, 406-416.

Schaffer, H.P. "Changes in developmental quotient under two conditions of material separation." British Journal of Social and Clinical Psychology, 1965, 30-46.

Taubenhaus, L.J. "Bottle proping for infant feeding." Journal of Pediatrics 1968, 72, 669-672.